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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,175	07/08/2003	Hideaki Fujita	0397-0465P	6455

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EXAMINER	
MARKHAM, WESLEY D	

ART UNIT	PAPER NUMBER
1762	

DATE MAILED: 01/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/614,175	FUJITA ET AL.	
	Examiner	Art Unit	
	Wesley D Markham	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 November 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6 and 8-13* is/are pending in the application.

4a) Of the above claim(s) *2* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-6 and 8-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/539,385.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Acknowledgement is made of the amendment filed by the applicant on 11/9/2004, in which the specification of the instant application was amended, Claims 1, 2, 6, and 11 – 13 were amended, and Claim 7 was canceled. **Claims 1 – 6 and 8 – 13** are currently pending in U.S. Application Serial No. 10/614,175 (with Claims 2 and 4 – 6, 11, and 12 (as they depend from Claim 2) being withdrawn from further consideration by the examiner pursuant to a restriction requirement), and an Office Action on the merits follows.

Drawings

2. The eight (8) sheets of formal drawings filed by the applicant on 7/8/2003 are acknowledged and approved by the examiner.

Specification

3. The objection to the specification, set forth in paragraph 10 of the previous Office Action (i.e., the non-final Office Action mailed on 8/9/2004), is withdrawn in light of the applicant's amendment to correct the antecedent basis issue raised by the examiner.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. The rejection of Claims 1, 4 – 6, and 8 – 13 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, set forth in paragraphs 12 – 15 of the previous Office Action, is withdrawn in light of the applicant's amendments to the claims and associated remarks.

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 1, 4 – 6, and 8 – 13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, the applicant amended independent **Claim 1** (from which **Claims 4 – 6 and 8 – 13** depend) to require that the organic polymer film have an absorptivity coefficient of light of not more than 7.0 mm^{-1} when the light beam has a wavelength of 1.5 microns or shorter. This limitation, and thus, the subject matter of Claims 1, 4 – 6, and 8 – 13, was not described in the specification as originally filed. In the "REMARKS" section

of the response filed by the applicant on 11/9/2004, the applicant points to (1) page 9, line 17, and page 15, lines 6 – 7, of the specification, and (2) a well-known formula used to calculate the absorptivity coefficient, as support for the subject matter of the amended claims. The examiner has reviewed the cited portions of the specification, and the specification as a whole, and maintains that the subject matter of Claims 1, 4 – 6, and 8 – 13 was not described, either explicitly, implicitly, or inherently, in the specification as originally filed. For example, page 9, line 17, does show that the film has a thickness of 25 microns (0.025 mm, as stated by the applicant). However, the light transmission data relied upon by the applicant to calculate the absorptivity coefficient is only provided for light having a wavelength of 650 nm (see page 10, line 11, and page 15, line 6, of the specification), not the broad range of "1.5 microns or shorter" as required by the claims. Additionally, the applicant appears to use sample "E" to calculate the now-claimed absorptivity coefficient. However, sample "E" is prepared by baking under a vacuum of 10 Torr (page 14, line 25), which is well outside the range of vacuum baking pressures required by independent Claim 1 (i.e., "1 Torr or lower"). As such, the 84% transmittance data for sample "E" is not relevant to the claimed process, which requires baking under a vacuum of 1 Torr or lower. Therefore, when examined as a whole, the subject matter of Claims 1, 4 – 6, and 8 – 13 (e.g., vacuum baking at 1 Torr or lower to form an organic polymer film having an absorptivity coefficient of light of not more than 7.0 mm^{-1} when the light beam has a wavelength of 1.5 microns or shorter) was not described in the specification in such a way as to reasonably

convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention. Please note that Claim 3 has not been rejected under 35 U.S.C. 112, first paragraph, because the specific absorptivity coefficient (e.g., 1.6 mm^{-1} at a wavelength of 650 nm) recited in Claim 3 does find support in the originally filed specification.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 4, 5, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Shoji et al. (USPN 4,748,228).

10. Regarding independent **Claim 1**, Shoji et al. teaches a method of producing a device having an organic polymer film, the method comprising applying a solution containing an organic polymer film-forming starting material on a substrate to form an applied film, and then baking the applied film under a vacuum of 1 Torr or lower to form the organic polymer film (Abstract, Col.4, lines 19 – 67, and Col.5, lines 1 – 3). The organic polymer film is a polyimide resin film (Abstract, Col.1, lines 9 – 14, and Col.4, lines 19 – 28), and the film-forming starting material is a precursor of a polyimide type resin (Col.4, lines 45 – 68, and Col.5, line 1), as required by **Claims 5**

and 13. Shoji et al. does not explicitly teach that the method is, "for producing an optical device having an organic polymer film through which a light beam is transmitted", as recited in the preamble of Claim 1. However, this statement in the preamble of the claim simply recites the "intended use" of the claimed method. This "intended use" cannot be the basis for the patentability of the claims, since the process taught by Shoji et al. is identical to the applicant's claimed process. As such, the process of Shoji et al. necessarily produces an optical device having an organic polymer film through which a light beam can be transmitted (i.e., the same device recited in the preamble of Claim 1). Further, Shoji et al. does not explicitly teach that the organic polymer film has an absorptivity coefficient of not more than 7.0 mm^{-1} when the light beam has a wavelength of 1.5 microns or shorter (Claim 1), specifically a wavelength of 500 nm to 800 nm (as recited in **Claim 4**). However, as discussed above in regards to Claim 1, the process taught by Shoji et al. is the same as the applicant's claimed process, including the type of polymer film deposited (i.e., a polyimide film) and the degree of vacuum utilized during the baking process (i.e., lower than 1 Torr). Therefore, unless essential process steps and/or limitations are missing from the applicant's claims, the process of Shoji et al. would have inherently produced an organic polymer film having the claimed high transmittance (i.e., an absorptivity coefficient of not more than 7.0 mm^{-1}) when a light beam has a wavelength of 1.5 microns or shorter, specifically a wavelength of 500 nm to 800 nm.

11. Claims 1, 4, 5, 8, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Burgoyne et al. (USPN 4,954,144).

12. Regarding independent **Claim 1**, Burgoyne et al. teaches a method of producing a device having an organic polymer film, the method comprising applying a solution containing an organic polymer film-forming starting material on a substrate to form an applied film, and then baking the applied film under a vacuum of 1 Torr or lower to form the organic polymer film (Abstract, Col.4, lines 30 – 52). The organic polymer film is a polyimide resin film (Abstract, Col.4, lines 44 – 45), and the film-forming starting material is a precursor of a polyimide type resin (Col.4, lines 15 – 38), as required by **Claims 5 and 13**. The thickness of the film is around 100 microns (Col.4, lines 39 – 40), which is within the range of thickness values claimed by the applicant in **Claim 8**. Burgoyne et al. does not explicitly teach that the method is, "for producing an optical device having an organic polymer film through which a light beam is transmitted", as recited in the preamble of Claim 1. However, this statement in the preamble of the claim simply recites the "intended use" of the claimed method. This "intended use" cannot be the basis for the patentability of the claims, since the process taught by Burgoyne et al. is identical to the applicant's claimed process. As such, the process of Burgoyne et al. necessarily produces an optical device having an organic polymer film through which a light beam can be transmitted (i.e., the same device recited in the preamble of Claim 1). Further, Burgoyne et al. does not explicitly teach that the organic polymer film has an absorptivity coefficient of not more than 7.0 mm^{-1} when the light beam has a wavelength of 1.5 microns or shorter

(Claim 1), specifically a wavelength of 500 nm to 800 nm (as recited in **Claim 4**). However, as discussed above in regards to Claim 1, the process taught by Burgoyne et al. is the same as the applicant's claimed process, including the type of polymer film deposited (i.e., a polyimide film) and the degree of vacuum utilized during the baking process (i.e., lower than 1 Torr). Therefore, unless essential process steps and/or limitations are missing from the applicant's claims, the process of Burgoyne et al. would have inherently produced an organic polymer film having the claimed high transmittance (i.e., an absorptivity coefficient of not more than 7.0 mm^{-1}) when a light beam has a wavelength of 1.5 microns or shorter, specifically a wavelength of 500 nm to 800 nm.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order

for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

15. Claims 1, 3 – 6, 8, 10, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okaniwa (USPN 5,694,513) in view of Matsuura et al. (USPN 5,108,201) and Matsuyama et al. (USPN 4,686,147), in further view of Yamagishi et al. (USPN 5,837,804).

16. Regarding independent **Claim 1, and Claims 3 and 4**, Okaniwa teaches a method for producing an optical device, specifically an optical waveguide, having an organic polymer film through which a light beam is transmitted, the method comprising applying a solution containing an organic polymer film-forming starting material on a substrate to form an applied film, and then baking the applied film to form the organic polymer film, wherein the organic polymer film has a low optical loss (i.e., a "high transmittance") when the light beam has a wavelength of 1.5 microns or shorter (Abstract, Col.1, lines 5 – 7, Col.2, lines 39 – 67, Col.4, lines 45 – 57, Col.7, lines 15 – 53, Col.8, lines 42 – 50, Col.9, lines 30 – 40, Example 5, and Col.11, lines 20 – 27). Okaniwa does not explicitly teach that the baking takes place under a vacuum of 1 Torr or lower. Specifically, Okaniwa teaches that the baking takes place in a nitrogen-purged oven and is silent regarding the pressure in the oven (Col.10, lines 41 – 64). However, Okaniwa does suggest that that material (i.e., the polyimide) used to produce the optical waveguide should have <u>high heat resistance</u> (Col.1, lines 54 – 57, and Col.2, line 8). Matsuura et al. also teaches that, in the art

of producing a polyimide optical waveguide, high heat resistance is a desirable pre-requisite for the optical waveguide because the waveguide must be able to withstand high temperatures generated during the processing of electronic components with which the waveguide is associated (Col.1, lines 6 – 23, Col.2, line 15, and Col.5, lines 51 – 58). Matsuyama et al. teaches that, in the art of heat-curing / baking a polyimide resin film, it is most desirable to perform such heat-curing / baking in a non-oxidizing atmosphere under a reduced pressure such as 0.1 Pa or below (i.e., a vacuum of 1 Torr or lower), or in a vacuum, so that the heat resistance of the polyimide layer is remarkably enhanced due to the curing in a vacuum as compared to a case in which the curing is carried out in air or a nitrogen atmosphere (Abstract, Col.5, lines 8 – 12 and 32 – 68, Col.6, lines 1 – 13, and Examples 3 and 6, which directly compare the heat resistance of a polyimide film baked in a vacuum of less than 1 Torr (e.g., 10^{-4} Pa) with the heat resistance of a polyimide film baked in a nitrogen atmosphere). Therefore, it would have been obvious to one of ordinary skill in the art to perform the oven baking process of Okaniwa under a reduced pressure of 0.1 Pa or below (i.e., below 1 Torr), or in a vacuum, as taught by Matsuyama et al., as opposed to a nitrogen atmosphere (as taught by Okaniwa) with the reasonable expectation of successfully and advantageously performing the baking / heat curing of the polyimide film under conditions that (1) do not oxidize the film, and (2) produce a polyimide film having an improved heat resistance, which is taught by both Okaniwa and Matsuura et al. to be a desirable quality in polymeric optical waveguides. The combination of Okaniwa, Matsuura et al., and Matsuyama et al.

does not explicitly teach that the organic polymer film has a high transmittance (e.g., an absorptivity coefficient of light of not more than 7.0 mm^{-1} at a wavelength of 1.5 microns or shorter, particularly at a wavelength of 500 nm to 800 nm), more particularly an absorptivity coefficient of light of not more than 1.6 mm^{-1} in the wavelength of 650 nm. Specifically, the combination of Okaniwa, Matsuura et al., and Matsuyama et al. is silent regarding the specific transmittance / absorptivity coefficient of light at the wavelengths claimed by the applicant. However, the combination of Okaniwa, Matsuura et al., and Matsuyama et al. does teach that the polyimide waveguide material should have a low optical loss (i.e., a high light transmittance) (Abstract, Col.2, lines 43 – 44, and Col.9, lines 36 – 40 of Okaniwa; Abstract, Col.1, line 21, and Col.2, line 13 of Matsuura et al.). Yamagishi et al. teaches that, in the art of producing polyimide optical waveguides, the polyimide waveguiding material should have an excellent transparency and an optical loss at a wavelength of 700 nm to 1.6 microns of 1 dB/cm or less (Abstract). Importantly, Yamagishi et al. teaches that the optical loss (and therefore the transmittance / optical absorptivity coefficient) of the polyimide can easily be adjusted by the proper choice of the kinds and amounts of the components used to produce the polyimide (Col.5, lines 4 – 10). Therefore, it would have been obvious to one of ordinary skill in the art to use the optimal kinds and amounts of polyimide film-forming components in the process of the combination of Okaniwa, Matsuura et al., and Matsuyama et al. (e.g., the vacuum baking process used to produce the polyimide optical waveguide) so as to obtain a polyimide optical waveguide having the optimum transmission

characteristics at the wavelength desired by the purveyor in the art. In other words, since it is clear from Okaniwa and Matsuura et al. that a low optical loss is desired, it would have been obvious to one of ordinary skill in the art to minimize the optical absorptivity coefficient (e.g., to below the level claimed by the applicant) and maximize the light transmittance of the polyimide waveguide material by using the correct kinds and proportion of film-forming components, as taught by Yamagishi et al., thereby producing a waveguide having a minimized optical loss. Regarding **Claims 5, 6, and 13**, the combination of references teaches that the organic polymer film is a polyimide film, particularly a photosensitive polyimide resin film, and the associated film-forming starting material is a precursor of a polyimide type resin (Col.2, lines 39 – 67, Cols.3 – 6, Col.7, lines 1 – 45, Col.8, lines 42 – 50, Col.9, lines 30 – 40, and Example 5 of Okaniwa). Regarding **Claim 8**, Okaniwa teaches that the thickness of the organic polymer film is not less than 5 microns and not more than 200 microns (Col.10, lines 50 – 52). Regarding **Claim 10**, the combination of references does not explicitly teach that the baking is performed under a vacuum of 1×10^{-2} Torr. However, Matsuyama et al. generally suggests that the baking should be performed in a non-oxidizing atmosphere, such as in a vacuum (i.e., a pressure below atmospheric pressure, or below 760 Torr) (Col.5, lines 9 – 12, 35, 45, and 56 – 58). This range of pressures encompasses the applicant's claimed pressure value of 1×10^{-2} Torr. It would have been obvious to one of ordinary skill in the art to perform the baking process of the combination of Okaniwa, Matsuura et al., and Matsuyama et al. at any degree of vacuum (e.g., below 760 Torr, at 1×10^{-2} Torr,

below 0.1 Pa (as also taught by Matsuyama et al.), etc.) with the reasonable expectation of successfully and advantageously producing a polyimide film having a higher heat resistance than when the baking is performed in air or nitrogen gas.

17. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okaniwa (USPN 5,694,513) in view of Matsuura et al. (USPN 5,108,201) and Matsuyama et al. (USPN 4,686,147), in further view of Yamagishi et al. (USPN 5,837,804), and in further view of Fan et al. (USPN 5,054,872).

18. The combination of Okaniwa, Matsuura et al., Matsuyama et al., and Yamagishi et al. teaches all the limitations of **Claim 9** as set forth above in paragraph 16, except for a process wherein the applied film is heated under atmospheric pressure before the baking under vacuum. However, Okaniwa does teach that the applied film is heated on a hot plate for a short amount of time to evaporate the solvent before baking the film (Col.4, line 52, Col.10, lines 50 – 53). No mention is made of performing the solvent evaporation step under a vacuum or a reduced pressure. Fan et al. teaches that, in the art of producing a polymeric optical waveguide, a coated substrate is typically baked at atmospheric pressure for several minutes to drive-off the solvent (Abstract, Col.11, lines 21 – 30). It would have been obvious to one of ordinary skill in the art to perform the step of heating the applied film on a hot plate to evaporate the solvent, as taught by Okaniwa, at atmospheric pressure with the reasonable expectation of (1) success, as Okaniwa does not teach or suggest that such solvent evaporation should be carried-out under either reduced or raised

pressure, and Fan et al. teaches that such a solvent removal process is typically carried out at atmospheric pressure, and (2) obtaining the benefits of evaporating the solvent at atmospheric pressure, such as performing the process as simply as possible (i.e., without needing to alter the pressure during the solvent removal step).

19. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okaniwa (USPN 5,694,513) in view of Matsuura et al. (USPN 5,108,201) and Matsuyama et al. (USPN 4,686,147), in further view of Yamagishi et al. (USPN 5,837,804), and in further view of Tesoro et al. (USPN 4,656,235).

20. The combination of Okaniwa, Matsuura et al., Matsuyama et al., and Yamagishi et al. teaches all the limitations of **Claim 10** as set forth above in paragraph 16, except for a process wherein the baking is performed under a vacuum of 1×10^{-2} Torr. However, Matsuyama et al. generally suggests that the baking should be performed in a non-oxidizing atmosphere, such as in a vacuum (Col.5, lines 9 – 12, 35, 45, and 56 – 58). Tesoro et al. teaches that, in the art of curing a polyimide film in a vacuum oven, the conditions in the oven are selected from a "workable range" in which the oven operates (Col.5, lines 32 – 45). Therefore, it would have been obvious to one of ordinary skill in the art to select and use a pressure in the vacuum baking process of the combination of references from the workable (i.e., operable) range of pressures of the specific vacuum oven utilized in the process. One of ordinary skill in the art would have done so with the reasonable expectation of successfully producing a polyimide film having a high heat resistance, regardless of the exact

degree of vacuum used in the baking process (i.e., regardless of whether the degree of vacuum is slightly above or below 0.1 Pa, which is a pressure explicitly taught by Matsuyama et al.).

21. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okaniwa (USPN 5,694,513) in view of Matsuura et al. (USPN 5,108,201) and Matsuyama et al. (USPN 4,686,147), in further view of Yamagishi et al. (USPN 5,837,804), and in further view of Nomura et al. (USPN 5,310,862).

22. The combination of Okaniwa, Matsuura et al., Matsuyama et al., and Yamagishi et al. teaches all the limitations of **Claims 11 and 12** as set forth above in paragraph 16, except for a process wherein the photosensitive polyimide resin is an acetophenone resin (Claim 11) and includes a tertiary amine (Claim 12). However, Okaniwa does suggest that the photosensitive group used in the photosensitive polyimide resin is not particularly limited and can be introduced into the polyimide by "a conventional method" (Col.4, lines 60 – 67, Col.5, lines 1 – 5, and Col.7, lines 28 – 45). Nomura et al. teaches that, in the art of producing a photosensitive polyimide resin composition (Abstract), the compound having photoreactivity is preferably a tertiary amine (Col.7, formula (9)) because such amino compounds have a high photoreactivity, thereby allowing less of the compound to be used in the polyimide-forming composition / solution (Col.7, lines 40 – 68, Col.8, lines 1 – 38). Further, Nomura et al. teaches that a photopolymerization initiator such as one based on acetophenone (Col.9, lines 40 – 48) should be incorporated into the film forming

composition in order to increase the photosensitivity of the composition (Col.9, lines 40 – 68, Col.10, lines 1 – 17). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate an acetophenone component and a tertiary amine into the polyimide resin of the combination of Okaniwa, Matsuura et al., Matsuyama et al., and Yamagishi et al. with the reasonable expectation of successfully and advantageously (1) using a photosensitive group (i.e., the tertiary amine) that is highly photosensitive so that less of the component needs to be utilized, and (2) increasing the photosensitivity of the composition due to the acetophenone-based component.

Response to Arguments

23. Applicant's arguments filed on 11/9/2004 have been fully considered but they are not persuasive.

24. Regarding the 35 U.S.C. 102 (anticipation) rejections based on Shoji and Burgoyne, the applicant argues that the purpose and functioning of the Shoji and Burgoyne technologies (e.g., to obtain good adhesion and high gas permeability, respectively) differ dramatically from that of the present invention (e.g., to provide a polyimide film having a high transmittance for an optical device). The applicant states that the polyimide film of the present invention thus differs completely from those of Shoji and Burgoyne as to its intent and properties.

25. In response, this argument is not convincing. First, it appears as though the applicant argues that Shoji and Burgoyne are "non-analogous" art. However, Shoji

and Burgoyne have each been used in a 35 U.S.C. 102 (anticipation) rejection, and arguments that an anticipatory reference is non-analogous art are not germane to a rejection under section 102 (see MPEP 2131.05). In this case, the processes taught by Shoji and Burgoyne are the same as the applicant's claimed process, including the type of polymer film deposited (i.e., a polyimide film) and the degree of vacuum utilized during the baking process (i.e., lower than 1 Torr). Therefore, the processes of Shoji and Burgoyne would have inherently produced an organic polymer film having the claimed high transmittance (i.e., an absorptivity coefficient of not more than 7.0 mm^{-1}) when a light beam has a wavelength of 1.5 microns or shorter, specifically a wavelength of 500 nm to 800 nm, is used. The applicant's argument that "the polyimide film of the present invention differs completely from those of Shoji and Burgoyne as to its properties" is not supported by any evidence of record and appears to be mere speculation on the part of the applicant. Further, this argument is contradictory to the applicant's claims, which do not appear to require any specific type of polyimide film (see, for example, Claim 5, in which a generic "polyimide resin film" is recited), or even that the polymer film be a polyimide (see, for example, Claim 1, in which a generic "organic polymer film" is recited).

26. Regarding the 35 U.S.C. 103 rejections, the applicant argues that the present invention does not relate to "high heat resistance", but to high transparency (e.g., an organic polymer film with an absorptivity coefficient of not more than 7.0 mm^{-1}), which is not taught or suggested by the references of record.

27. In response, this argument is not convincing. Specifically, the fact that applicant has recognized another advantage (e.g., that baking a polyimide film under a vacuum of 1 Torr or lower produces a film having a low absorbtivity coefficient / high transmittance) which would flow naturally from following the suggestion of the prior art (e.g., baking a polyimide film under a vacuum of 1 Torr or lower in order to produce a film having a high heat resistance) cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D Markham whose telephone number is (571) 272-1422. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wesley D Markham
Examiner
Art Unit 1762

WDM

SHRIVE P. BECK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700